Feasibility of four patient reported outcome measures in the Danish Hip Arthroplasty Registry.A cross-sectional study of 6000 patients.

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Feasibility of four patient reported outcome measures in the Danish Hip Arthroplasty Registry. A cross-sectional study of 6000 patients.

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Conclusion:

We conclude that Hip Dysfunction and Osteoarthritis Outcome Score (HOOS), Oxford Hip Score (OHS), SF-12 and EQ-5D are appropriate questionnaires for administration in a hip registry.

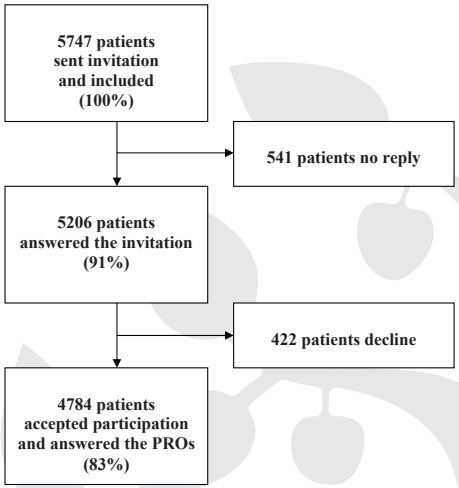
Introduction:

Validated patient reported outcome measurement systems (PROs) after total hip arthroplasty (THA) are warranted in the Danish Hip Arthroplasty Registry (DHR), as well as in other national hip arthroplasty registries. We therefore validated four PROs measuring quality of life, pain and hip function.

Aim:

Our aim was to assess response rate, floor/ceiling effect, missing items, and cost of PROs relevant to THA patients in a register setting.

Figure: Patient flow chart

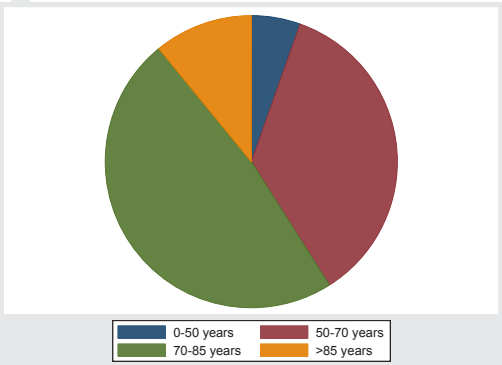


Material and Methods:

5747 primary THA patients, operated 1-2, 5-6, and 10-11 years ago, irrespective of diagnose were randomly selected from the Danish Hip Arthroplasty Registry. Every patient received two different PROs, one general and one disease/site-specific. Based on previous literature, SF-12 Health Survey (SF12), EQ-5D, Oxford 12-item Hip Score (OHS), and Hip dysfunction and Osteoarthritis Outcome Score (HOOS) were included. HOOS subscales (Pain, Physicalfunction Shortform (PS) and Quality of Life (QoL)) and EQ5D Index and EQ5D VAS were used.

Cost was assessed as license requirements, fees and need for manual validation of the scanned questionnaires.

Graph: Age groups



Results:

5206/5747 (91%) patients (mean age 72 years, 59% females) responded. Non-responders did not differ from responders with regard to age and gender. Response rates for the PROs were 82-84%. The floor effect was <0.5% for all PROs. Ceiling effects ranged from 46% (EQ-5D Index), to 6% (SF-12).

Percentage of missing items ranged from 15% (HOOS Pain) to 3% (HOOS QoL and EQ-5D Index). When applying questionnaire specific rules for missing items, a score could not be calculated for 1-6% of the PROs. The proportion of items needing manual validation ranged from 4% (EQ-5D) to 1% (SF-12, HOOS).

OHS and HOOS do not acquire any license. For SF-12 administrative fee, survey reference kit, and scoring software cost altogether 1,569.90 USD. Since less than 5000 patients received EQ-5D, we could use EQ-5D free of charge and without sharing data with the EuroQol Group.

Table: Results

All patients	HOOS % (95% CI) N= 2365			OHS % (95% CI) N= 2419	SF-12 % (95% CI) N= 2377		EQ-5D % (95% CI) N= 2407	
	Pain	PS	QoL		PCS	MCS	Index	VAS
Response rate: accepted participation and answered the PROs	82.4% (81.0-83.8)			84.1% (82.7-85.4)	82.6% (81.2-84.0)		83.9% (82.6-85.2)	
Floor effect Worst outcome	0.1% (0-0.2)	0.1% (0-0.3)	0.5% (0.3-0.8)	0.0%	0.1% (0-0.3)	0.1% (0-0.3)	0.0%	0.3% (0.1-0.5)
Ceiling effect Best outcome	36.6% (34.6-38.5)	31.2% (29.3-33.1)	30.5% (28.6-32.3)	20.2% (18.6-21.8)	6.1% (5.1-7.0)	6.1% (5.1-7.0)	45.8% (43.8-47.8)	12.1% (10.8-13.4)
Discarded PROs subscales	3.0% (2.4-3.7)	2.7% (2.1-3.4)	1.9% (1.3-2.5)	1.2% (0.8-1.7)	2.3% # (1.7-2.9)	2.3% # (1.7-2.9)	3.2% (2.5-3.9)	5.5% (4.6-6.4)
PROs with missing items/ PROs(subscales)	14.6% (13.2-16.1)	9.0% (7.8-10.1)	3.2% (2.5-3.9)	5.4% (4.5-6.3)	9.9% (8.7-11.1)	9.9% (8.7-11.1)	3.2% (2.5-3.9)	5.5% (4.6-6.4)
Proportion of items missing	3.4% (3.2-3.5)			1.2% (1.0-1.3)	2.3% (2.1-2.5)		1.9% (1.7-2.2)	
PROs with manual validation/PROs	7.8% (6.7-8.9)			7.2% (6.2-8.2)	7.7% (6.7-8.8)		21.8% (20.2-23.4)	
PROs with manual validation/PROs subscales	4.3% (3.5-5.1)	2.6% (2.0-3.3)	2.5% (1.9-3.1)	7.2% (6.2-8.2)	7.7% (6.6-8.8)	7.7% (6.6-8.8)	4.1% (3.3-4.9)	18.8% (17.3-20.4)
Proportion of items validated	0.9% (0.8-1.0)			1.5% (1.4-1.7)	0.8% (0.7-1.0)		4.3% (4.0-4.6)	
Licence	No			No	Yes		Yes	
Cost	Free			Free	1,569.90 USD *		Free ¤	
Type of PROs	Disease- or site-specific PROs				General PROs			

With missing data estimation method: maximum data recovery. With complete date: 9.9%.
* Administrative fee, survey reference kit, and scoring software
¤ Since less than 5000 patients received EQ-5D, we could use EQ-5D free of charge and without sharing data with the EuroQol Group

Discussion:

Based on our results, it will now be possible to choose appropriate PROs to best fit the needs of national hip arthroplasty registries. The low floor effects and high ceiling effects can largely be explained by postoperative administration and the overall good outcome from THA.

University of Southern Denmark

Hips Don't Lie

PROs Don`t Lie

OUH Odense University Hospital